<u>Amendments to the Claims:</u>

Revise the claims as set forth below. This listing of claims will replace all prior versions and listings, of claims in the application:

<u>Listing of Claims:</u>

1.   (Currently amended) A method for multiplexing data streams comprising ~~the steps of~~:

obtaining a first input data stream;

obtaining first time stamp information for the first input data stream;

obtaining buffer delay information;

determining a first lowest bit occurrence constraint based on the first time stamp information and the buffer delay information;

determining a first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward;

determining a first earliest time constraint based on the first highest bit occurrence constraint; [[and]]

determining a first latest time constraint based on the first lowest bit occurrence constraint;

<u>dividing the first input data stream into a first plurality of packets;</u>

<u>dividing the second input data stream into a second plurality of packets; and</u>

<u>combining the first plurality of packets and the second plurality of packets to provide an output data stream by combining the first plurality of packets and the second plurality of packets in an order determined by the first earliest time constraint and the first latest time constraint for each packet of the first plurality of packets and second earliest time constraint and the second latest time constraint for each packet of the second plurality of packets.</u>

2.   (Original)   The method of claim 1 wherein the first lowest bit occurrence constraint increases substantially linearly over time.

3.   (Original)   The method of claim 1 wherein the first lowest bit occurrence constraint varies from increasing linearly over time to accommodate drift of the first input data stream

4.   (Original)   The method of claim 1 wherein the first input data stream has a substantially constant bit rate.

5.   (Original)   The method of claim 1 wherein the first input data stream varies from a constant bit rate as influenced by drift.

6.   (Currently amended) The method of claim 1 wherein the first input data stream has a substantially constant frame rate.

7.   (Original)   The method of claim 1 wherein the first input data stream has a variable frame rate.

8.   (Original)   The method of claim 1 wherein the first input data stream has a constant frame size.

9. (Original) The method of claim 1 wherein the first input data stream has a variable frame size.

10. (Original) The method of claim 1 wherein the first input data stream includes buffer delay information.

11. (Original) The method of claim 1 wherein the first input data stream is selected from a group consisting of:

a video stream;

an audio stream;

a closed caption stream; and

a content protection data stream.

12. (Currently amended) The method of claim 1 wherein the step of determining the first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward further comprises the step of:

determining the first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward by a constant amount.

13. (Currently amended) The method of claim 1 further comprising the steps of:

obtaining a second input data stream;

obtaining second time stamp information for the second input data stream;

determining a second lowest bit occurrence constraint based on the second time stamp information and the buffer delay information;

determining a second highest bit occurrence constraint based on shifting the second lowest bit occurrence constraint upward;

determining a second earliest time constraint based on the second highest bit occurrence constraint; and

determining a second latest time constraint based on the second lowest bit occurrence constraint.

14.   (Original)   The method of claim 13 wherein the second input data stream has a second substantially constant bit rate.

15.   (Canceled)

16.   (Canceled)

17.   (Currently amended) The method of claim [[16]]1 wherein the first latest time constraint for each packet of the first plurality of packets is determined in relation to a first initial bit of each packet of the first plurality of packets and the second latest time constraint for each packet of the second plurality of packets is determined in relation to a second initial bit of each packet of the second plurality of packets.

18.   (Original)   The method of claim 17 wherein the first earliest time constraint for each packet of the first plurality of packets is determined in relation to a first final bit of each packet of the first plurality of packets and the second earliest time constraint for each packet of the second plurality of packets is determined in relation to a second final bit of each packet of the second plurality of packets.

19.   (Currently amended) The method of claim 13 further comprising the step of:

calculating an initial current time value.

20.   (Currently amended) The method of claim 19 wherein the step of calculating an initial current time value comprises the step of:

calculating the initial current time value by selecting a lowest value of the first earliest time constraint of an initial packet of the first plurality of packets and the second earliest time constraint of an initial packet of the second plurality of packets.

21.   (Currently amended) The method of claim [[20]]62 wherein the step of combining the first plurality of packets and the second plurality of packets to provide an output data stream comprises the steps of:

marking as candidates the packets of the first plurality of packets that have not yet been output and for which the first earliest time constraint is less than or equal to the current time value;

marking as candidates the packets of the second plurality of packets that have not yet been output and for which the second earliest time constraint is less than or equal to the current time value.

22.   (Currently amended) The method of claim 21 further comprising ~~the step of~~:

in the absence of candidates, combining an empty packet into the output data stream.

23.   (Canceled)

24.   (Currently amended) The method of claim 21 further comprising ~~the step of~~:

when exactly one of the candidates is marked, combining the marked candidate into the output stream.

25.   (Canceled)

26.   (Currently amended) The method of claim 21 further comprising ~~the step of~~:

when more than one of the candidates is marked, selecting a selected candidate for which a latest time constraint of the first latest time constraint and the second latest time constraint is smallest.

27.   (Currently amended) The method of claim 26 further comprising ~~the step of~~:

combining the selected candidate into the output data stream.

28.   (Currently amended) The method of claim 27 further comprising the step of:

calculating a new current time value based on a size of the selected candidate.

29.   (Currently amended) The method of claim 21 further comprising the step of:

when more than one of the candidates is marked, randomly selecting a selected candidate

from among the marked candidates.

30.   (Currently amended) The method of claim 29 further comprising the step of:

combining the selected candidate into the output data stream.

31.   (Canceled)

32.   (Original)   The method of claim 15 wherein the output data stream is a

Moving Picture Experts Group (MPEG) stream.

33.   (Currently amended) A data stream multiplexer receiving a plurality of input

data streams and combining the plurality of input data streams to provide an output data stream,

the multiplexer comprising:

a first input data stream input for receiving a first input data stream;

a first lowest bit occurrence constraint calculator operatively coupled to the first input

data stream input for calculating a first lowest bit occurrence constraint based on first time stamp

information derived from the first input data stream and buffer delay information;

a first highest bit occurrence constraint calculator operatively coupled to the first lowest bit occurrence constraint calculator for calculating a first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward;

a first earliest time constraint calculator operatively coupled to the first highest bit occurrence constraint calculator for calculating a first earliest time constraint based on the first highest bit occurrence constraint; [[and]]

a first latest time constraint calculator operatively coupled to the first lowest bit occurrence constraint calculator for calculating a first latest time constraint based on the first lowest bit occurrence.constraint; .

a second input data stream input for receiving a second input data stream;

a divider operatively coupled to the first input data stream input and to the second input data stream input to divide the first input data stream into a first plurality of packets and to divide the second input data stream into a second plurality of packets;

a combiner coupled to the divider for combining the first plurality of packets and the second plurality of packets to provide an output data stream wherein the combiner combines the first plurality of packets and the second plurality of packets in an order determined by the first earliest time constraint and the first latest time constraint for each packet of the first plurality of packets and second earliest time constraint and the second latest time constraint for each packet of the second plurality of packets.

34.   (Canceled)

35.   (Original)   The data stream multiplexer of claim [[34]]33 wherein the output data stream is a drift-free Moving Picture Experts Group (MPEG) program stream.

36. – 42. (Canceled)

43.   (Currently amended) A program storage device readable by a machine, the program storage device tangibly embodying a program of instructions executable by the machine to perform steps for multiplexing data streams provided as inputs to the machine, the steps comprising:

obtaining a first input data stream;

obtaining first time stamp information for the first input data stream;

obtaining buffer delay information;

determining a first lowest bit occurrence constraint based on the first time stamp information and the buffer delay information;

determining a first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward;

determining a first earliest time constraint based on the first highest bit occurrence constraint; [[and]]

determining a first latest time constraint based on the first lowest bit occurrence constraint;

obtaining a second input data stream;

obtaining second time stamp information for the second input data stream;

determining a second lowest bit occurrence constraint based on the second time stamp

information and the buffer delay information;

determining a second highest bit occurrence constraint based on shifting the second

lowest bit occurrence constraint upward;

determining a second earliest time constraint based on the second highest bit occurrence

constraint;

determining a second latest time constraint based on the second lowest bit occurrence

constraint;

dividing the first input data stream into a first plurality of packets;

dividing the second input data stream into a second plurality of packets; and

combining the first plurality of packets and the second plurality of packets to provide an

output data stream by combining the first plurality of packets and the second plurality of packets

to provide an output data stream further includes combining the first plurality of packets and the

second plurality of packets in an order determined by the first earliest time constraint and the

first latest time constraint for each packet of the first plurality of packets and second earliest time

constraint and the second latest time constraint for each packet of the second plurality of packets.

44.   (Currently amended) The program storage device of claim 43 wherein the step of

determining the first highest bit occurrence constraint based on shifting the first lowest bit

occurrence constraint upward further comprises the step of:

determining the first highest bit occurrence constraint based on shifting the first lowest

bit occurrence constraint upward by a constant amount.

45.   (Canceled)

46.   (Canceled)

47.   (Canceled)

48.   (Currently amended) The program storage device of claim [[45]]43 further comprising the step of:

calculating an initial current time value.

49.   (Currently amended) The program storage device of claim 48 wherein the step of calculating an initial current time value includes the step of:

calculating the initial current time value by selecting a lowest value of the first earliest time constraint of an initial packet of the first plurality of packets and the second earliest time constraint of an initial packet of the second plurality of packets.

50.   (Currently amended) The program storage device of claim [[49]]63 wherein the step of combining the first plurality of packets and the second plurality of packets to provide an output data stream comprises the steps of:

marking as candidates the packets of the first plurality of packets that have not yet been output and for which the first earliest time constraint is less than or equal to the current time value;

marking as candidates the packets of the second plurality of packets that have not yet been output and for which the second earliest time constraint is less than or equal to the current time value.

51.   (Currently amended) The program storage device of claim 50 further comprising ~~the step of~~:

in the absence of candidates, combining an empty packet into the output data stream.

52.   (Canceled)

53.   (Currently amended) The program storage device of claim 50 further comprising ~~the step of~~:

when exactly one of the candidates is marked, combining the marked candidate into the output stream.

54.   (Canceled)

55.   (Currently amended) The program storage device of claim 50 further comprising ~~the step of~~:

when more than one of the candidates is marked, selecting a selected candidate for which a latest time constraint of the first latest time constraint and the second latest time constraint is smallest.

56.   (Currently amended) The program storage device of claim 55 further comprising ~~the step of~~:

combining the selected candidate into the output data stream.

57.   (Canceled)

58.   (Currently amended) The program storage device of claim 50 further comprising ~~the step of~~:

when more than one of the candidates is marked, randomly selecting a selected candidate from among the marked candidates.

59.   (Currently amended) The program storage device of claim 58 further comprising ~~the step of~~:

combining the selected candidate into the output data stream.

60.   (Currently amended) The program storage device of claim 59 further comprising ~~the step of~~:

calculating a new current time value based on a size of the selected candidate.

61.   (New) A method for multiplexing data streams comprising:

obtaining a first input data stream wherein the first input data stream includes buffer delay information;

obtaining first time stamp information for the first input data stream;

obtaining buffer delay information;

determining a first lowest bit occurrence constraint based on the first time stamp information and the buffer delay information;

determining a first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward;

determining a first earliest time constraint based on the first highest bit occurrence constraint; and

determining a first latest time constraint based on the first lowest bit occurrence constraint.

62. (New) A method for multiplexing data streams comprising:

obtaining a first input data stream;

obtaining first time stamp information for the first input data stream;

obtaining buffer delay information;

determining a first lowest bit occurrence constraint based on the first time stamp information and the buffer delay information;

determining a first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward;

determining a first earliest time constraint based on the first highest bit occurrence constraint;

determining a first latest time constraint based on the first lowest bit occurrence constraint;

obtaining a second input data stream;

obtaining second time stamp information for the second input data stream;

determining a second lowest bit occurrence constraint based on the second time stamp information and the buffer delay information;

determining a second highest bit occurrence constraint based on shifting the second lowest bit occurrence constraint upward;

determining a second earliest time constraint based on the second highest bit occurrence constraint;

determining a second latest time constraint based on the second lowest bit occurrence constraint;

calculating an initial current time value; and

calculating the initial current time value by selecting a lowest value of the first earliest time constraint of an initial packet of the first plurality of packets and the second earliest time constraint of an initial packet of the second plurality of packets.

63.   (New) A program storage device readable by a machine, the program storage device tangibly embodying a program of instructions executable by the machine to perform steps for multiplexing data streams provided as inputs to the machine comprising:

obtaining a first input data stream;

obtaining first time stamp information for the first input data stream;

obtaining buffer delay information;

determining a first lowest bit occurrence constraint based on the first time stamp information and the buffer delay information;

determining a first highest bit occurrence constraint based on shifting the first lowest bit occurrence constraint upward;

determining a first earliest time constraint based on the first highest bit occurrence constraint;

determining a first latest time constraint based on the first lowest bit occurrence constraint;

obtaining a second input data stream;

obtaining second time stamp information for the second input data stream;

determining a second lowest bit occurrence constraint based on the second time stamp information and the buffer delay information;

determining a second highest bit occurrence constraint based on shifting the second lowest bit occurrence constraint upward;

determining a second earliest time constraint based on the second highest bit occurrence constraint;

determining a second latest time constraint based on the second lowest bit occurrence constraint;

calculating an initial current time value; and

calculating the initial current time value by selecting a lowest value of the first earliest time constraint of an initial packet of the first plurality of packets and the second earliest time constraint of an initial packet of the second plurality of packets.